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EVALUATION OF MOUNTAIN PINE BEETLE INFESTATIONS IN PONDEROSA PINE STANDS ON THE LEWIS AND CLARK NATIONAL FOREST, MONTANA

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By
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SUMMARY

Mountain pine beetle infestations in ponderosa pine stands within four areas on the Lewis and Clark National Forest, Montana, were evaluated during September 1965. The trends of these infestations were downward. Direct control measures were not recommended.

INTRODUCTION

Observations during aerial surveys indicated that damage by the mountain pine beetle was prevalent on the Lewis and Clark National Forest, Montana, during 1965. A biological evaluation of these infestations was made by Scott Tunnock, Division of State and Private Forestry. He was accompanied by John McCulloch, Forester, Belt Creek Ranger District, on September 27 and by Paul Barker, Assistant Ranger, Judith District, on September 28. Almost all the infested trees were on U.S. Forest Service land. Some were on private land within the Blake Creek drainage.

Tree killing by mountain pine beetles has been increasing for the past several years on this Forest. However, the ponderosa pine type involved has been chronically infested for a number of years. Control measures were recommended in 1947 when 5,856 trees were infested within 9,950 acres. Treatment was not undertaken, and by 1950, infestations subsided.1/

TECHNICAL INFORMATION

Causal agent.--Mountain pine beetle, Dendroctonus ponderosae Hopk.

Host trees attacked.--Ponderosa pine, Pinus ponderosa var. scopulorum Engelmann.

1/ Evenden, J. C. Forest insect survey - Lewis and Clark National Forest, unpublished report filed at Intermountain Forest and Range Expt. Sta., Missoula, Montana, 1950.

Type of damage.--Mountain pine beetle broods kill ponderosa pine trees by destroying the cambium layer.

Location and intensity or size of outbreak.--Infested groups of trees were concentrated in four areas drawn on the attached map.

1. About 800 acres on the southeast side of Monarch Mountain (T. 15 N., R. 7 E.) contained more than 500 killed trees.

2. The Yogo Creek drainage had about 30 groups of dead pines from Sawmill Gulch to Skunk Gulch (T. 13 N., Rs. 10 and 11 E.). There were probably more than 400 trees killed in 1964.

3. About the same number of trees were attacked within a mile-wide swath extending from opposite the mouth of Yogo Creek southeast to Indian Hill.

4. In the Big Snowy Mountains, an area of some 1,500 acres with large groups of dead ponderosa was observed in Blake and Galloway Creeks (T. 11 N., R. 17 E., secs. 12, 13, 23, and 24; and T. 11 N., R. 18 E., secs. 7, 8, 18, and 19). There were probably 1,000 trees.

Biological data.--The perimeters of groups of trees killed in 1964 were searched for trees attacked in 1965. These currently infested trees were examined for factors that would influence the potential of infestations. during 1966. Ponderosa pine trees attacked in 1964 and 1965 in the four infested areas ranged in size from 6 inches to 14 inches in diameter. Adult beetles were still laying eggs in most of the currently infested trees. The oldest larvae were first instars. Data from the examinations are summarized in table 1.

Table 1.--Data collected during examinations of mountain pine beetle infested trees on the Lewis and Clark National Forest, Montana, during September 27-29, 1965

Infested area	No. of trees examined	No. of trees in each category of potential 1/		
		+	0	-
Monarch Mountain	19	3	6	10
Yogo Creek	14	2	3	9
Yogo-Indian Hill	10	3	2	5
Big Snowy Mountains	1	1	--	--
Total	44	9	11	24

1/ + = Tree may produce enough brood to attack more than one tree of its size.
0 = Tree may produce enough brood to attack one tree of its size.
- = Tree may not produce enough brood to attack one tree of its size.

Few natural enemies were noticed in any of the infestations. Woodpeckers may have some influence as the broods develop. There was very little competition from species of Ips.

Environmental factors.--There were no obvious site disturbances that could have triggered these outbreaks. Sandy, rocky soil and dry, southeastern slopes may reduce tree vigor in these areas.

DISCUSSION

Data in table 1 indicates that most trees infested in 1965 within the four areas have a low potential for producing destuctive numbers of beetles in 1966. The prediction is that infestations will decrease in 1966 and damage will be minor. This prediction is based on conjecture for the Big Snowy Mountains where only one currently infested tree could be examined because of inaccessibility.

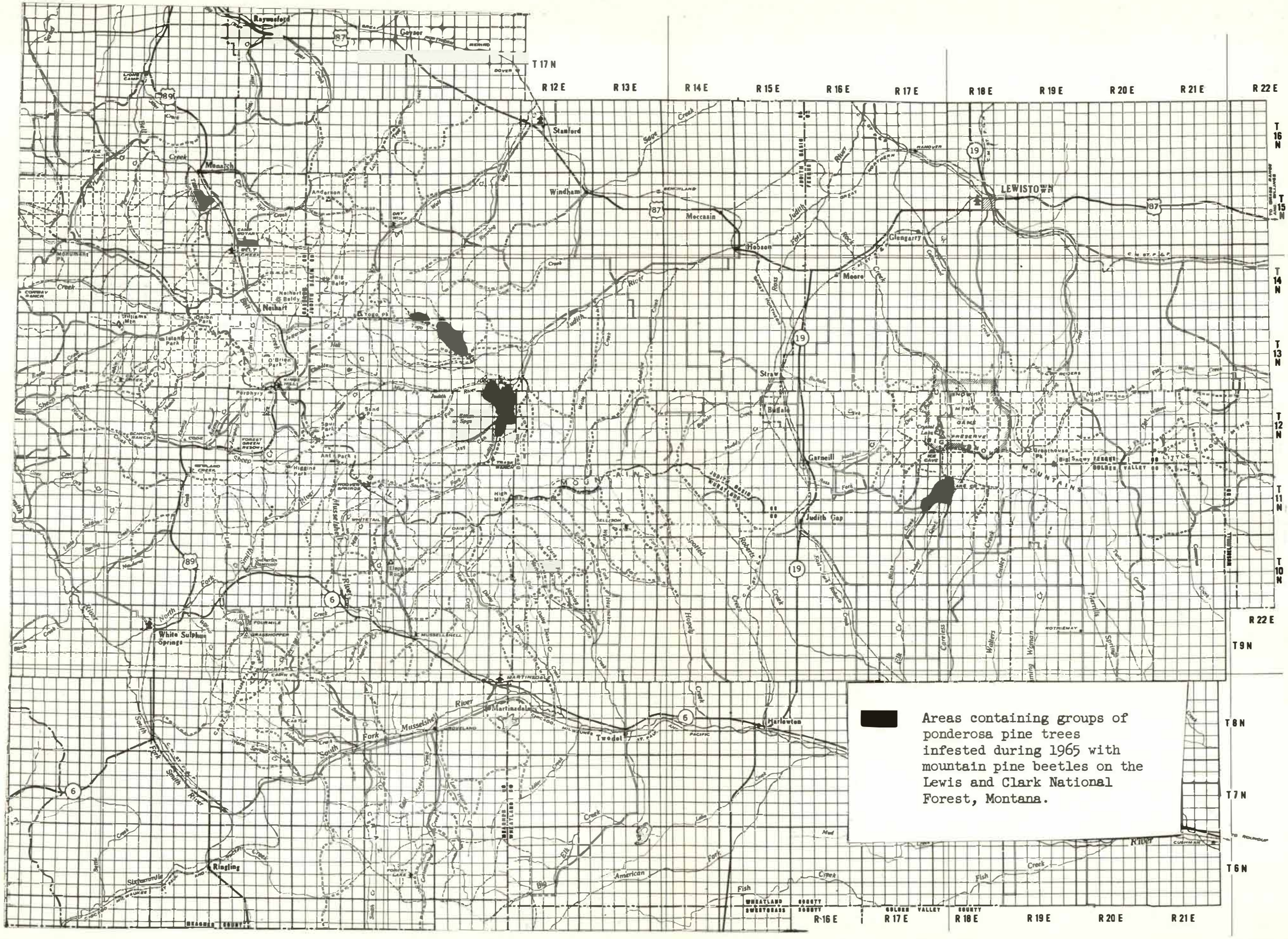
The infested ponderosa pine trees are all growing in areas that have high recreational use. Their esthetic value is considered more than their commercial value. Dead and dying trees are classed as unsightly, and the public often questions the cause of death.

Although direct control measures can be used in this case, it does not seem practical to control declining infestations.

RECOMMENDATIONS

Chemical treatment of infested trees is not recommended. Tree killing will probably decrease until only an occasional victim can be detected. Red needles are cast within 2 years and the gray snags should not be too obvious surrounded by the remaining stems.

Ponderosa pine stands on the Lewis and Clark National Forest will be surveyed annually from the air. If damage by the mountain pine beetle increases, further biological evaluations will be made.


Areas containing groups of ponderosa pine trees infested during 1965 with mountain pine beetles on the Lewis and Clark National Forest, Montana.
T 17 N
T 16 N
T 15 N
T 14 N
T 13 N
T 12 N
T 11 N
T 10 N
T 9 N
T 8 N
T 7 N
T 6 N
R 12 E
R 13 E
R 14 E
R 15 E
R 16 E
R 17 E
R 18 E
R 19 E
R 20 E
R 21 E
R 22 E
Raymesford
Stanford
Monarch
Windham
Meccasin
Hobson
Moore
Glengarry
LEWISTOWN
Neihart
Straw
Buffalo
Garneill
Judith Gap
White Sulphur Springs
Martinsdale
Twodot
Harlowton
Ringling
Judith Mountains
Big Snowy Mountains
Crystal Lake Game Preserve
Ice Cave
Lake Sacajawea
Forest Green Group
Belt Creek
Judith River
Musselshell River
South Fork Musselshell River
South Fork Smith River
Smith River
Sheep Creek
Big Elk Creek
American Fork
Fish Creek
Yogo Ph
Big Baldy
Williams Mtn
Island Park
O'Brien Park
Porphyry Ph
Sand Pt
Higgins Park
Anderson
Camp Royal
Belt Forest
Dry Wolf
Wolf
Spring
Sage
Ant Park
Snowy Mtn
Greenhouse Ph
Judith Gap
Roberts
Spotted
Hopely
Careless
Walters
Woman
Elk
Twin
Cottonwood
Ross Fork
Judith Basin
Judith Forest
Judith Wilderness Basin
Benchland
Hanover
Rotheay
Cubman
Golden Valley County
Wheatland County
Sweetgrass
Meagher County
Broadwater County
Fergus County
Petroleum County
Judith Basin County
Musselshell County
Yellowstone County
Golden Valley
Rotheay
Cubman
Fish
Mud
Creek
River
Fork
Mountains
Ph
Pt
Lake
Gulch
Canyon
Basin
Park
Forest
Reserve
Wilderness
Area
Group
Camp
Cabin
Ranch
Trail
Road
Highway
Pacific
Milwaukee
Great Northern
C M St P & P
Areas containing groups of ponderosa pine trees infested during 1965 with mountain pine beetles on the Lewis and Clark National Forest, Montana.